CHAPTER 1

INTRODUCTION

1.1 Background of Study

In December 2014 floods have submerged main roads of the city in the state of Pahang. Consequently, the main road between the cities in Pahang were cut off. This makes it difficult to deliver aid quickly to the city that affected by the floods. In addition, rainfall during the northeast monsoon is often associated with the occurrence of floods in major cities in Pahang. For example, in 18 December 2014, the rain continued throughout the day caused flooding in several road around Kuantan district (JKR Pahang, 2015). Figure 1.1 shows flooding that occured in Sungai Lembing. In 12 January 2015, flooding in Temerloh became serious when water levels of Pahang River rise up spilling into the streets and villages nearby which caused the road access between Temerloh and Bera disconnected and also road access to Jerantut (JKR Daerah Temerloh, 2015). Figure 1.2 shows flooding that occured in Temerloh.

Figure 1.1: Flood in Sungai Lembing

Source: mediaharia.blogspot.com (2015)

Figure 1.2: Flood in Temerloh

Source: JKR Daerah Temerloh, (2015)

According to Malaysia Meteorological Department (MetMalaysia, 2015) the rainfall distribution pattern in Malaysia can be determine by the seasonal wind flow patterns and local topographic features. Peninsular Malaysia was divided into 5 (five) rainfall regions with distinctive patterns of rainfall, namely North West Malaya, West Malaya, Port Dickson-Muar Coast, South West Malaya and East Malaya (Dale, 1959). Pahang is located at East Malaya rainfall region.

The climate of Peninsular Malaysia is described by three seasons, namely southwest monsoon (SWM), northeast monsoon (NEM) and inter-monsoon. Usually, the wind over Pahang is generally light and variable, however, some uniform periodic changes in the wind flow patterns. This is because Pahang is mainly governed by the regime of northeast monsoon. During the northeast monsoon, the exposed areas on the eastern part of the Peninsula receive heavy rainfall. On the other hand, the areas which are sheltered by the mountain ranges (Titiwangsa Range) are more or less free from its influence (Jamaludin et al., 2010). Pahang River has received high total rainfall during northeast monsoon period with almost 40 percent of total rainfall annually (JMM, 2010). The northeast monsoon has the greatest impact in characterizing rainfall patterns for Pahang. On the other hand, Malaysia also experienced numerous drought occurrences with the most significance one in the 1997/98 El Nino, which had an extensive impact on the environment and social activities across the whole nation (Jamaludin et al., 2010). Some regions of Malaysia were threatened by means of extensive wild forest fire on account of prolonged dry weather condition.

Rainfall pattern is one of the most important inputs and key issues for hydrological science and practices (Sangati and Borga, 2009). Rainfall pattern of Pahang is highly varible in time and space. From previous studies indicate significant positive trends in rainfall such as the analyses in the central Argentina (Lucero and Rozas, 2002), central region of Australia (Gallant et al., 2007), northern and central Italy (Brunetti et al., 2000, 2001) and the United States of America (Karl and Knight, 1998). While, a decrease in rainfall can also be found in some parts of the world such